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AUTHOR Pollock, Charles R.
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ABSTRACT

Many higher education institutions are focusing on their admissions operations. They are attempting to ensure a steady stream of enrolling students, and/or attempting to ensure the quality or composition of their entering classes. However, many colleges have not developed a comprehensive method of tracking student cohorts, measuring retention, and studying the effects of intervention strategies. Western New England College has developed a computer system for tracking and studying retention. In addition to providing the typical retention and graduation rates, the system can do such things as provide information on changes in majors, provide statistical analyses, and track multiple reasons for withdrawing. A computerized system allows the institution to monitor students' academic performances and the reasons for attrition, and to compare differences among subgroups and between different cohorts. Without building a comprehensive database and analyzing the data, important information can be overlooked, information which can help the institution select the proper actions to take. Databases can be simple or very extensive, but they are extremely valuable in helping personnel understand, plan, and take appropriate actions. (ABL)

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STUDENT RETENTION DATABASES: AN IMPORTANT ELEMENT IN ENROLLMENT MANAGEMENT

by

Charles R. Pollock, Ed.D.
Director of Enrollment Management
Western New England College
Springfield, MA

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STUDENT RETENTION DATABASES SIMPLIFIED

INTRODUCTION

Everyone should be aware of the projected decline in full-time college students for certain sections of the country such as New England. The primary reason for the projected decline is, of course, the declining number of 18-22 year olds. We are also aware that the decline which was projected for the early 1980's did not materialize. Several explanations have been offered. For example the college participation rates for 18-24 year olds increased by about 2% during the 1981-1986 period, virtually offsetting the decline in numbers. Furthermore, an 11% increase in the enrollment of students over 25 occurred during the same period (Cohen & Kroe, 1988). Some researchers do not believe that the factors which offset the decline in enrollment earlier in this decade will have a significant impact on the projected declines through the mid 1990's. That is, we cannot expect the participation rates to continue increasing. There is, however, continuing debate on enrollment projections.

Demographics is not the only reasons for a projected decline in full-time college attendance. The military is becoming a significant competitor for high school graduates. The Army recently announced that, for the first time in this decade, they have failed to meet their enlistment goals. The reason cited was the declining demographics; and I believe we can anticipate increasing competition as the number of 18 year olds declines further. Povlosky (1988) argues that there is a very good chance

the draft will have to be re-instituted by the end of the century to maintain our current manpower levels. Some believe that financial aid from the federal government and some state governments will not keep pace with inflation, making it more difficult for students to enroll. Senator Nunn's proposal and similar ideas on youth service may have an adverse impact on full-time enrollment. These and other factors indicate that some institutions of higher education may experience enrollment difficulties.

In anticipation of the future, many institutions have already focused on their admission's operation. They are attempting to ensure a steady stream of enrolling students, and/or attempting to ensure the quality or composition of their entering classes.

Many colleges are also increasing their retention efforts. Colleges are beginning to more seriously evaluate if they are viewing the student as a "whole person," if they are meeting the needs of their students, and if they are providing personalized services. It is recognized that efforts should not be directed at retaining students per se. Rather, colleges should strive to create the type of environment and to provide the support which will enable and encourage students to persist. There is increased emphasis on orientation programs; freshman year experience courses; improved academic advising; study skills, time management, and tutorial programs; and expanded social programming. Nevertheless, many colleges have not developed a <u>comprehensive</u> method of tracking student cohorts, measuring

retention, and studying the effects of intervention strategies.

Most colleges and universities have some system for tracking each year's entering cohort and for measuring retention and graduation rates. Some institutions create paper lists and manually follow their students each year. Other institutions have developed computerized systems which are primarily concerned with determining enrollment each term. Although some institutions are not certain what variables should be included in a comprehensive retention system, longitudinal retention data is often not maintained because of "inadequate computer support."

Western New England College has developed a computer system for tracking and studying retention. In addition to providing the typical retention and graduation rates, the system can:

(1) follow specific groups of students such as minority or resident students;

(2) analyze credit hours attempted versus completed and grade point averages;

(3) provide information on changes in majors;

(4) track multiple reasons for withdrawing;

(5) follow students as they depart and re-enroll;

(6) analyze differences between annual cohorts;

(7) provide lists, counts, and statistical analyses;

(8) monitor students' involvement in student activities and athletics; and

(9) be linked with American Council on Education's Cooperative Institutional Research Program (CIRP) tape and the institution's questionnaire data.

The system does not require computer programming. The retention databases are created and maintained separate from the institution's student databases -- and this is by choice.

I assumed the position of Director of Enrollment Management at Western New England College in July, 1987. I discovered that the method by which students were tracked from matriculation to graduation was by using paper rosters which contained very small and sometimes barely legible notations about withdrawal, dismissal, readmission, and graduation dates. As far as I was concerned, the method was too inefficient and inaccurate to provide the type of information the College needed. One of my first tasks was, therefore, to create retention databases which contain over 120 variables including biographical information, high school and previous college information, and data for each semester of enrollment. In addition to gathering information on the most recent entering class, I established databases for students who entered each fall and spring semester since September, 1984. It was difficult re-creating some data for the previous classes. However, re-creating information for the last few years provided the ability to make immediate comparisons between entering cohorts. Without the re-creation, I could not have determined whether our current situation was better or worse than we should expect.

These retention databases are created using an electronic spreadsheet (similar to LOTUS 1-2-3), and the analysis of the data is performed with SPSS-X. Although an understanding of the electronic spreadsheet and SPSS-X is required, the system can be

easily maintained after it is created. I have found this system to be effective in monitoring the 700+ new students who enroll annually; and small and medium size institutions who do not have a computerized retention system may want to consider this approach.

STUDENT FLOW MODELS

Most colleges track (in some form) their student cohorts, and track their primary academic subdivisions such as groupings of majors or a school. Table 1 is an example of a chart for Engineering students. (This and other examples reflect fictitious data.) It shows the attrition and graduation rates for a six year period. We see that for the 1978 freshman cohort the attrition after one year was 24%, 36% after two years, etc. The method of tracking students in this fashion is referred to as cohort survival or the "Markov" method. Terms that are associated with this type of tracking include longitudinal enrollment analysis and student flow analysis.

The cohort survival method captures the cohort of entering freshmen at a specified time. At our institution, this period has been defined as the end of the second week of school which is the last day a student can enroll or add a course. Students are then tracked each semester. Four year colleges usually track full-time students for at least six years, while two year institutions normally follow students for a minimum of 4 years.

TABLE 1
TRADITIONAL MODEL

ATTRITION AND GRADUATION RATES OF FALL FRESHMEN
SCHOOL OF ENGINEERING
(Fictitious Data)

Fall Class	Total # in Class	Attrition Within												Graduation Within					
		One Year		Two Years		Three Years		Four Years		Five Years		Six Years		Four Years		Five Years		Six Years	
		#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
1978	75	18	24.0	27	36.0	35	46.7	33	44.0	35	46.7	35	46.7	33	44.0	35	46.7	37	49.3
1979	70	20	28.6	29	41.4	31	44.3	30	42.9	30	42.9	33	47.1	33	47.1	35	50.0	35	50.0
1980	80	24	30.0	30	37.5	37	46.3	36	45.0	40	50.0	40	50.0	39	48.8	40	50.0	40	50.0
1981	92	20	21.7	34	37.0	39	42.4	43	46.7	42	45.7	45	48.9	45	48.9	47	51.1	47	51.1
1982	100	25	25.0	36	36.0	46	46.0	44	44.0	47	47.0	47	47.0	45	45.0	48	48.0	53	53.0
1983	95	23	24.2	35	36.8	45	47.4	43	45.3	44	46.3			47	49.5	47	49.5		
1984	105	28	26.7	39	37.1	49	46.7	49	46.7					49	46.7				
1985	110	29	26.4	39	35.5	51	46.4												
1986	104	27	26.0	38	36.5														
1987	100	25	25.0																
1988	98																		

Presenting the figures in this fashion focuses on attrition. The information can also be portrayed in terms of retention. Table 2 is based on the same data as the previous example, but the numbers reflect the students retained each year. The figures are the percentages of the entering cohort which were still enrolled. Whereas the previous chart listed a 24% attrition rate after one year for the 1978 cohort, the retention rate on this chart is 76%.

The number of students retained each year can also be shown as a percentage of the students who were enrolled the previous year, as depicted in Table 3. For the 1986 cohort, 66 students were enrolled after two years (that is they were enrolled the fall of their third year), and the 66 students is equivalent to 85.7% of the students who were enrolled one year earlier. The annual retention percentages have been averaged and displayed at the bottom of the table.

Ideally, a college would chart these figures each semester rather than once a year. Many institution would also follow cohorts that enter mid-year and transfer students. For demonstration purposes, however, I have attempted to simplify the examples.

These different methods of recording cohort survival information lead into an example of how the data can be used for projections. Table 4 includes the same figures as the previous table; they have simply been rearranged. For example, the fall 1988 column reflects the total number of students who were enrolled from the various cohorts. The average percent retained

TABLE 2
RETENTION MODEL

RETENTION RATES OF FALL FRESHMEN
SCHOOL OF ENGINEERING
(Fictitious Data)

Class Entering Fall	Total Number in Class	One Year		Two Years		Three Years		Four Years		Five Years		Six Years	
		%	#	%	#	%	#	%	#	%	#	%	#
1978	75	76.0	57	64.0	48	52.0	39	12.0	9	6.7	5	4.0	3
1979	70	71.4	50	58.6	41	55.7	39	10.0	7	7.1	5	2.9	2
1980	80	70.0	56	62.5	50	53.8	43	6.3	5	0.0	0	0.0	0
1981	92	78.3	72	63.0	58	57.6	53	4.3	4	3.3	3	0.0	0
1982	100	75.0	75	64.0	64	54.0	54	11.0	11	5.0	5	0.0	0
1983	95	75.8	72	63.2	60	52.6	50	5.3	5	4.2	4		
1984	105	73.3	77	62.9	66	51.4	54	6.7	7				
1985	110	73.6	81	64.5	71	53.6	59						
1986	104	74.0	77	63.5	66								
1987	100	75.0	75										
1988	98												
Average		74.2		62.9		53.8		7.9		4.4		1.4	

TABLE 3
ANNUAL RETENTION MODEL

RETENTION RATES OF FALL FRESHMEN
SCHOOL OF ENGINEERING
(Fictitious Data)

Class Entering Fall	Total Number in Class	One Year		Two Years		Three Years		Four Years		Five Years		Six Years	
		%	#	%	#	%	#	%	#	%	#	%	#
1978	75	76.0	57	84.2	48	81.3	39	23.1	9	55.6	5	60.0	3
1979	70	71.4	50	82.0	41	95.1	39	17.9	7	71.4	5	40.0	2
1980	80	70.0	56	89.3	50	86.0	43	11.6	5	0.0	0	0.0	0
1981	92	78.3	72	80.6	58	91.4	53	7.5	4	75.0	3	0.0	0
1982	100	75.0	75	85.3	64	84.4	54	20.4	11	45.5	5	0.0	0
1983	95	75.8	72	83.3	60	83.3	50	10.0	5	80.0	4		
1984	105	73.3	77	85.7	66	81.8	54	13.0	7				
1985	110	73.6	81	87.7	71	83.1	59						
1986	104	74.0	77	85.7	66								
1987	100	75.0	75										
1988	98												
Average		74.2		84.9		85.8		14.8		54.6		20.0	

TABLE 4
RETENTION RATES AND ENROLLMENT PROJECTIONS
SCHOOL OF ENGINEERING
(Fictitious Data)

	Actual Enrollment Data												Projected			
	Fall 83		Fall 84		Fall 85		Fall 86		Fall 87		Fall 88		Fall 89		Fall 90	
Fall Class	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#
< '78	50.0	3														
1978	55.6	5	60.0	3												
1979	17.9	7	71.4	5	40.0	2										
1980	86.0	43	11.6	5	0.0	0	0.0	0								
1981	80.6	58	91.4	53	7.5	4	75.0	3	0.0	0						
1982	75.0	75	85.3	64	84.4	54	20.4	11	45.5	5	0.0	0				
1983	100.0	95	75.8	72	83.3	60	83.3	50	10.0	5	80.0	4	20.0	1		
1984			100.0	105	73.3	77	85.7	66	81.8	54	13.0	7	54.6	4	20.0	1
1985					100.0	110	73.6	81	87.7	71	83.1	59	14.8	9	54.6	5
1986							100.0	104	74.0	77	85.7	66	85.8	57	14.8	8
1987									100.0	100	75.0	75	84.9	64	85.8	55
1988											100.0	98	74.2	73	84.9	62
1989													100.0	95	74.2	70
1990															100.0	90
Total Enrollment	286		307		307		315		312		309		301		291	

Notes:
1. The percentages are calculated by dividing the fall enrollment by the previous fall enrollment.

2. The Fall 1989 projections were calculated by multiplying the Fall 1988 enrollments by the average, annual retention rates from Table 3.

each year from the previous chart can then be used to project future enrollments. Obviously, a slight modification of the average may be appropriate if you have new intervention strategies which are working, or if the more recent classes have different characteristics or have abnormal retention rates. The average, however, provides a starting benchmark.

These average retention percentages and a projection of the number of entering students can yield a more accurate total enrollment projection than many other methods. A similar method used by some institutions is to create comparable charts using class standing rather than the cohorts. Progression to sophomore, junior, and senior status can then be measured for enrollment projections.

In the fall of 1989 the actual fall enrollment figures could be entered in Table 4 and the projections recalculated. Maintaining these charts on an electronic spreadsheet simplifies the information recording and the recalculations. Again, this example is simplified; but it demonstrates the principles involved.

ONE STEP BEYOND STUDENT FLOW MODELS

In order to have a thorough understanding of retention, an institution must be able to determine retention and graduation information for various subpopulations, not just aggregate data or the primary academic units. You need to be able to answer such questions as:

1. Are there differences in enrollment patterns between

residents and commuters, minority and non-minority students, men and women, students enrolled in various majors, etc. Are there differences when various factors are combined? (For example, is there a difference in the attrition rates of minority resident and minority commuter students?)

2. What types of students are withdrawing voluntarily? Is the college losing its better students to other colleges, or are the withdrawals primarily the weaker students?
3. What are the migration patterns among the various schools or departments? Are there particular problems with the retention rates or graduation rates of students who initially enrolled in certain majors?
4. What percentage of the attrition is attributed to academic dismissal and what percent is voluntary withdrawal?

The system which I will be presenting can be utilized to answer these and many other research questions. It can help you understand your situation so that you can take appropriate actions.

Table 1 was an example of a typical cohort survival chart with graduation information on students who entered in the School of Engineering. This is important information. For most institutions who seriously evaluate their situation, Table 1 does not provide enough information; and a comprehensive database is required. Table 1 indicated that 100 students entered in the School of Engineering in 1982 and 45 students or 45% graduated within 4 years. If the data is maintained in a retention database, you could easily determine if many of the students who

matriculated in Engineering graduated from another school. You might find a pattern similar to Table 5. Whereas 45% of the entering Engineering students graduated, only 25% graduated from the School of Engineering. In this fictitious, exaggerated example the School of Business had the highest graduation rate, 62.5%. They also had the highest percentage of students who graduated from the school in which they initially enrolled.

TABLE 5
Four Year Graduation Rates by Division
(Fictitious Data)

Division at Matriculation	Cohort	Division at Graduation			Total
		A&S	Bus	Eng	
	#	%	%	%	%
Arts & Sciences	100	30.0	20.0	0	50.0
Business	200	12.5	50.0	0	62.5
Engineering	100	10.0	10.0	25.0	45.0
Total	400	16.3	32.5	6.3	55.0

This type of analysis can be taken one step further. The migration of students among the various majors can be measured. Table 6 indicates that two-thirds of the original 60 government majors graduated in four years. However, only 8% (5 students) graduated with a major in government. At most colleges, graduating 67% of the students would be considered outstanding and could be regarded as an indication of the quality of the students who matriculated. On the other hand, if you are able to analyze the data further and find that a small percentage graduated with a major in government; you may want to raise some questions. Are there problems with the government department?

'Do students believe there are no career opportunities available to government students? Is there a problem with the times when government classes are scheduled which forces students to consider other majors? Is there a problem with the government faculty/student interaction or academic advising? The reasons for a large discrepancy between the percent of government majors graduating and the percent graduating with a government degree could be important. (Simpson, 1986) Without a retention database, it would be very difficult to determine these patterns.

TABLE 6
Four Year Graduation Rates by Major
(Fictitious Data)

Major at Matriculation	Cohort	Major at Graduation			Total
		Govt	Hist	Pol	
	#	%	%	%	%
Government	60	8.3	33.3	25.0	66.7
History	30	0	33.3	13.3	46.7
Political Science	20	0	40.0	25.0	65.0
Total	110	4.5	34.5	21.8	60.9

VARIABLES

Every college which builds computerized retention databases must decide what type of data and how much data will be collected and stored. These can be very difficult decisions. Peter Ewell (1987) has identified the items which are most commonly used in tracking systems (see Table 7). Thirteen variables are defined as fixed or semi-fixed. These variables do not include the student's name since many computerized systems function entirely

on the social security number. The addition of the student's name may be extremely important for many institutions. He has listed eight variables as term variables, those items to be tracked each semester. Mr. Ewell has also included eight variables which the computer can derive from the other elements.

TABLE 7
Common Tracking System Elements

Fixed/Semi-Fixed	
Social Security Number	Financial Aid Status
Date of Birth	Entering Student Type
Gender	Major
Race/Ethnicity	Time of Attendance
Last College/High School	Student Intent
Test Scores	Employment Status
Marital Status	

Variable (Term)	
Hours Attempted	Academic Status
Hours Completed	Major
Term GPA	Time of Attendance
Degree Earned	Requirement Status

Derived	
Total Hours Attempted	Still Enrolled
Total Hours Completed	First Term Only
Average Course Load	Completed
Completion Rate	Stopped Out

Ewell: 1987

I would now like to focus on some of the 126 variables which are in Western New England College's retention databases. The variables are listed in the appendix and I will comment only on a few. The first variable is the student's social security number which is the "key" for our system. If I conduct a survey of students' attitudes or acquire ACE's Cooperative Institutional Research Program computer tape for our students' questionnaire

results, the information can be combined with the retention database information by matching records on the social security number.

Variables 16 through 20 are used to record information on the student's home address at the time of entrance. The Registrar's computer file will also contain information of the home address. However, the variables in the Registrar's system may change during the student's enrollment. Therefore, it is important to have a "snapshot" of the information at the time of entrance. It is obviously not necessary to have five variables which deal with location, but this database can be used for admissions and retention purposes. The database can be used to track students by state, the zip codes which are associated with a particular city, the first three digits of the zip code which correspond to a postal region, the College Board's Enrollment Planning Service area codes, or cities which we have defined according to their proximity to the College.

Some of the variables could be calculated by the computer when needed rather than being part of the database. Variable 18, the first three digits of the zip code, and Variable 26, total SAT scores, are examples. I chose to code such variables into the database for ease of utilization.

Variables 39-48 are taken from the Cooperative Institutional Research Program questionnaire which we administer each year. Again, I could have decided to leave these out and match two computer files when I want to look at this data; but it is easier to include some of the information in the retention database.

Variables 52-54 record the student's first academic division, major, and residence. I have chosen not to follow all of the changes in these variables throughout the student's college career. Rather, I record the entering information and the information at the time of separation. Other colleges record all changes in majors. Some researchers believe that the additional data is not warranted; recording the first and last major is usually sufficient.

The retention literature stresses the importance of a student's involvement on campus. Therefore, I track in Variables 55-64 the student's involvement in intercollegiate athletics, student government, departmental clubs, interest groups, and service organizations during the first two years. I am only looking at two years because these years are critical for students. If they are enrolled the fall of the third year, they will probably graduate from the institution.

Variables 65-70 record information about the student at the time of separation. The items include the student's last academic division, curriculum, GPA, residence, and reason for withdrawal; and the balance owed to the College at the time of separation. This information may be entered, removed, and re-entered several times as a "stopout" withdraws and re-enrolls.

Variables 71-120 record term specific information. Mid-term grade information (Variable 74) and notifications that the student has not been attending class (Variable 75) are recorded only in the first semester; while GPA, credits attempted, and credits completed are tracked only for the first two years. I

had to decide how much data to maintain, and I believe these variables are most critical in the semesters indicated.

For each semester there is a variable to record the reason for withdrawal. Students are supposed to go through an exit interview process, and the reason for withdrawal can be obtained at that time. I also conduct follow-up surveys of all voluntary withdrawals, and telephone those who do not respond. The reasons for leaving may be reported differently, and the information collected after the withdrawal may be more accurate. Some students are not willing to provide the true reasons for withdrawal to an exit interviewer; they may be more inclined to give "personal" as the reason, or provide a socially acceptable reason such as "financial."

Extensive planning is important when deciding on variables. After I listed the elements which I thought were essential, the President, Vice President for Student Affairs, Registrar, and Director of Institutional Coordination reviewed the variables. A few items were added after our conversations. I hoped that the essential elements had been included; but, unfortunately, I needed to change a few things after starting to use the databases. It was difficult to redefine variables and their location in the database, and then to correct the data properly. Extensive, advanced planning is essential.

Utilizing a database of 126 variables or 234 characters of data per student may seem like overkill. However, I have heard of an institution which includes in their retention database many additional variables and the results of questionnaires. This

college's database has 2400 characters for each student. Suslow (1977) once wrote: "The nature of one's investigations is limited only by the depth of the data elements available for each student's profile." The college with 2400 characters of data per student has a lot they can investigate!

SPREADSHEET

I elected to utilize an electronic spreadsheet to store data on each student. I could have initially asked the Computer Center to write a program. That would have taken more time than I was willing to wait; I wanted to create the database quickly. I also did not want to ask the Computer Center to write a program until I was relatively certain of what I wanted to include. I could have utilized a database management program similar to DBASE III, or a variety of other software packages. Although some institutions may find using a database the appropriate manner to proceed, for a variety of institutional reasons I chose to use a spreadsheet on the mainframe, a Data General computer. I proceeded with the assumption that I would ask within two years for a computer program to be written. After several revisions in the variables, I am now ready to request a program. The data which I have been storing in the spreadsheet can be easily converted to a new program which will allow the institution's database to be interfaced with the retention databases. I have been very satisfied with the system I am using, so waiting to ask for the "ultimate system" has not been a problem.

Western New England College has a very sophisticated

interactive computer system to which commercial software such as WordPerfect for word processing; MathPlan, an electronic spreadsheet; and SPSS-X for statistical analysis are integrated. I can extract a considerable portion of the demographic data for students who enter at a specified time and load it into the spreadsheet. This significantly reduces the computer entry which is necessary. Table 8 displays a portion of a sample spreadsheet. You will note that I have combined several variables into one column. This is necessary because there are more variables than columns. Column A contains the social security number and the name, while column B contains data for several variables. Most of the biographical information is static once it is entered, and combining variables into one column does not create a problem. The data to be changed each semester, the term specific data, is located to the right; and each variable has its own column. By splitting the screen vertically with the spreadsheet's windows function, I can keep the names visible on the left and position the term variable next to the name. For example, I can position column Z next to the column which contains the names. Data can then be entered quickly and easily by moving down the column. Granted this method is not ideal for a computer "purest", but it is a very functional approach and it has some advantages over utilizing a database program.

Whenever I have updated a database and want to analyze it, I print the spreadsheet. Instead of directing the computer to print it on paper, I specify that it should be printed to a

TABLE 8
Sample of a Section of an Electronic Spreadsheet
(Fictitious Data)

	A	B 3-13	C 14-26
1			
2			
3			
4	098604876Adams, Adam J	09860F6YN710405660	0NY13611136 743303800.072.8380480 860
5	103466896Adams, Carl T	09861F6YN810422680	0NJ0702407010431039 50.602.4380440 820
6	100285406Adams, Debra A	09860M5NN510714640	0XX00000000 040000000.000.09999999999
7	584911263Bailey, Jennifer M	09861M3YN110609670	0PR00926009 043333500.662.1380390 770
8	018414154Carlson, John C	09861M6YN210516680	0MA01060010 242215920.133.15905201110
9	019607305Camerato, Mary N	09861F6YN911202680	0MA02061020 742216750.712.8380350 730
10	028261508Donnoly, Pat L	09861M6YN910122680	1MA01036010 212223980.432.4300400 700
11	581090000Edwards, William W	09860M5NN710404590	0MA01103011 210000000.000.09999999999
12	047642980Franklin, Ruth A	09861M6YN210706670	0CT06810068 340701200.273.4330460 790
13	014946397Gardner, George P	09860M6YN111005660	0MA01085010 212223280.000.0310380 690
14	034906684Howard, Cindy	09860F6YN910119660	0MA01201012 142217750.430.0400420 820
15	014665861Jones, Henry S	09861F6YN110914680	0MA01108011 212220250.303.14905201010
16	230464076Jones, Robert C	09861M6YN210724680	0PA18062180 643912500.502.34205801000
17	213643953Manning, Heidi	09861M6YN110604680	0MA01106011 212220250.163.44506501100
18	044383718Nelson, Charles	09860M6YN110601640	0CT06074060 540707000.000.0370330 700
19	0926864780'Connor, Michele	09861M6YN911010670	0NY11782117 2043358980.760.0370430 800
20	011662216Thompson, Mary	09861M6YN910801680	0MA01030010 212200050.002.3370380 750

computer file. The result is a rectangle of data without the columns and rows headings. The width of the computer file is 234 characters and the number of lines corresponds to the number of students in the file.

ANALYSIS

Collecting the data is of no value unless you can obtain lists of students who meet certain criteria, compare various types of students, and perform analysis. As stated earlier, I utilize the SPSS-X software to analyze the data. I recognize that many people are not familiar with statistical packages. However, this (or similar software packages) can be used by non-technical Student Affairs administrators. We do not have to totally rely on our Computer Centers and Institutional Research Offices.

By selecting the students you want and specifying the type of report, you can obtain valuable information which can be very important in understanding attrition and taking appropriate actions. Some of the ways we have used or will be using the databases are:

1. Analyzing the differences in various biographical variables for students who entered each year.
2. Determining the number of students living on campus who reside within commuting distance.
3. Responding to questions from an academic department and demonstrating that the quality of students has not declined.
4. Analyzing students who withdrew or were dismissed.

5. Reviewing the number of credit hours attempted and completed.
6. Providing a formula for predicted GPA which the Admissions Office can utilize.
7. Analyzing ACE's Cooperative Institutional Research Program data and comparing the information (such as chances of transferring) with what actually occurred.
8. Looking at the academic performance of students from specific high schools over a period of time.
9. Identifying the profile of students who are more likely to have academic difficulty.
10. Providing information which supports the implementation of a two credit freshman year experience course.
11. Providing a matrix of the majors which students declared on entrance and the majors at graduation.
12. Identifying the majors which enroll the most students who have academic difficulty or who withdraw.
13. Studying the attrition of special groups of students such as minority students.

CLOSING

Retention will become more and more important to most institutions. Tracking attrition, retention, and graduation data is important; and tracking can be accomplished with simple paper lists. However, such tracking will not provide sufficient information to help you understand your attrition and retention situation. A paper list will not enable you to monitor your

students' academic performances, the characteristics of withdrawals, the reasons for attrition, etc. It will not allow you to compare differences among subgroups and between different cohorts. A comprehensive retention database is needed to accomplish such objectives. Without building a comprehensive database and analyzing the data, you could overlook important information about your institution and students, information which will help you select the proper actions to take. Peter Ewell has written that building and maintaining such a tracking system is the "first step in building a comprehensive research program to support enrollment management." (Ewell, 1985)

I hope that this information is sufficient to challenge those who do not use a retention database to consider one. Databases can be simple or very extensive, but they are extremely valuable. They can help you understand, plan, and take appropriate actions.

REFERENCES

Cohen, M. & Kroe, P. (1988). National Estimates of Higher Education, School Year 1988-89. Washington, DC:National Center for Educational Statistics. (CS 89-315).

Einstein, G. & Nocks, E. (1987). Learning to Use SPSSx. Englewoods Cliffs, NJ: Prentice-Hall.

Endo, J. and Bittner, T. (September 1985). "Developing and Using a Longitudinal Student Outcomes Data File: The University of Colorado Experience," in P.T. Ewell (Ed.) New Directions for Institutional Research: Assessing Educational Outcomes, no. 47. San Francisco: Jossey-Bass.

Ewell, P. (1987). "Principles of Longitudinal Enrollment Analysis: Conducting Retention and Student Flow Studies." In J.A. Muffo and G. McLaughlin, (Ed.), A Primer on Institutional Research, Tallahassee, FL: Association of Institutional Research.

Ewell, P. (April, 1985). Recruitment, Retention, and Student Flow: A Comprehensive Approach to Enrollment Management Research. Paper presented at the 25th Annual Forum of the Association of Institutional Research, Portland, OR.

Finney, J. (May, 1988). Long-term Enrollment Projections from Entering Cohort Size and Retention Goals. Paper presented at the 28th Annual Forum of the Association of Institutional Research, Phoenix.

Gills, J. (May, 1988). "Student Flow at Work: Practical Applications of a Multi-Use Model." Paper presented at the 28th Annual Forum of the Association of Institutional Research, Phoenix.

Lenning, O. (December, 1982). "Variable Selection and Measurement Concerns," in E. Pascarella (Ed.) New Directions for Institutional Research: Studying Student Attrition, no. 36. San Francisco: Jossey-Bass.

Murray, J., & Uhl, N. (May, 1988). "Using SAS to Track Both Traditional and Non-traditional Patterns of Enrollment." Paper presented at the 28th Annual Forum of the Association of Institutional Research, Phoenix.

Povlosky, R. (1988). The Shape of Things to Come. East Hartford, CT: Ron Povlosky.

Rumpf, D., Coelen, S., & Creran, F. (1987). "Estimating Post-secondary Student Flow With Limited Data." Research in Higher Education. Vol 27, no. 1.

Simpson, W. (Winter, 1986-87). "Building a Student Flow Model." AIR Professional File. The Association for Institutional Research, #28.

Simpson, W. (May/June, 1987). "Tracking Students Through Majors," Journal of Higher Education, Vol. 58, no. 3.

Suslow, S. (Spring, 1977). "Benefits of a Cohort Survival Projection Model," New Directions for Institutional Research, no. 13.

Appendix

WESTERN NEW ENGLAND COLLEGE
ENROLLMENT MANAGEMENT

Retention Database Dictionary

Variable			Size	Position	
1.	SSNO	Social Security Number	9	1 - 9	(A)
2.	NAME	Name (Last,First)	24	10-33	(A)
3.	MATDATE	Matriculation date (ie 0986)	4	34-37	
4.	COHORT	Cohort member 0 = No - Transfer student 1 = Yes - Freshman	1	38	
5.	SEX	Sex M = Male F = Female 9 = Missing	1	39	(A)
6.	RACE	Race 1 = Black 2 = Am. Indian or Alaskan 3 = Hispanic 4 = Asian or Pacific Islander 5 = Non-Resident Alien 6 = White 9 = Missing	1	40	
7.	CIT	Citizenship N = No Y = Yes 9 = Missing	1	41	(A)
8.	HANDIC	Handicapped 1 = Hearing 2 = Speech 3 = Learning disability 4 = "Special" 5 = Health related 6 = Sight 7 = Loss of Limb 8 = Muscular 9 = Neurological 0 = Other N = None Z = Missing	1	42	(A)

9.	REL	Religion 1 = Catholic 2 = Protestant 3 = Jewish 4 = Eastern Orthodox 5 = Muslim 6 = Bahai 7 = Other 8 = Undeclared 9 = Missing 0 = None	1	43	
10.	TRAD	Traditionality 1 = Traditional student 2 = Non-traditional student 9 = Missing	1	44	
11.	BIRMON	Birth month 99 = Missing	2	45-46	
12.	BIRDAY	Birth day 99 = Missing	2	47-48	
13.	BIRYR	Birth year 99 = Missing	2	49-50	
14.	VET	Veterans Status 0 = No 1 = New law veteran 2 = Non-veteran 3 = Active service 4 = Old law veteran 5 = Veteran dependent 6 = Disabled veteran 9 = Missing	1	51	
15.	COGSDEP	COGS dependent program 0 = No 1 = Yes 9 = Missing	1	52	
16.	STATE	State XX = International 99 = Missing	2	53-54	(A)
17.	ZIP	Zip code (first 5 digits) 00000 = Missing	5	55-59	(A)
18.	ZIP3	Zip code (first 3 digits) 000 = Missing	3	60-62	(A)
19.	EPS	CEEB Enrollment Planning Service code 00 = Missing	2	63-64	

20.	AREA	Greater Springfield area student 1 = (Very Close) 2 = (Other area cities) 3 = (Northern CT) 4 = (all other cities) 9 = Missing	1	65
21.	HSNO	High School Number 000000 = Unknown	6	66-71 (A)

22.	HSRANK	High school rank in class
		(Placement divided by # in class)
		0.00 = Missing
			4	72-75

23	HSGPA	High school GPA (As calculated by Admissions Office) 0.0 = Missing	3	76-78
24.	VSAT	SAT verbal 999 = Missing	3	79-81
25.	MSAT	SAT math 999 = Missing	3	82-84
26.	SATTOT	Total SAT score 9999 = Missing	4	85-88
27.	ACT	ACT 99 = Missing	2	89-90
28.	TRNO	Transfer college number 0000 = Unknown 9999 = Missing	4	91-94 (A)
29.	TRCRED	Transfer Credits 99 = Missing	2	95-96
30.	TRGPA	Transfer GPA 8.88 = Missing (not appropriate) 9.99 = Missing	4	97-100
31.	RISK	Risk code/scholarship points 88 = Risk student 99 = Missing Other Numbers = Scholarship points	2	101-102
32.	ORIENT	Summer orientation 0 = Did not attend 1 = Did attend 9 = Missing	1	103

33.	**ADVISE**	ADVISE program 0 = Not in program 1 = Yes - attended less than 3 meetings 2 = Yes - attended 3 or more meetings 9 = Missing	1	104	
34.	**FSEM**	Freshmen seminar 0 = No 1 = Yes 9 = Missing	1	105	
35.	**ENGTEST**	English placement test score 999 = Missing	3	106-108	
36.	**MATHTEST**	Math placement test score 999 = Missing	3	109-111	
37.	**STUDSKIL**	Study skills course given by WNEC 0 = No 1 = Yes 9 = Missing	1	112	
38.	**ATHREC**	Athletic recruit 0 = No 1 = Yes 9 = Missing	1	113	
39.	**DEGRPLAN**	Highest degree planned (ACE Survey) 0 = None 1 = Vocational certificate 2 = Associate 3 = Bachelor's 4 = Master's 5 = PhD or EdD 6 = MD, DO, DDS or DVM 7 = LLB or JD 8 = BD or MDIV 9 = Other Z = Missing	1	114	(A)
40.	**CHOICE**	College Choice (ACE Survey) 1 = 1st choice 2 = 2nd choice 3 = 3rd choice 4 = less than 3rd choice 9 = Missing	1	115	
41.	**CONFIN**	Concern for finances (ACE Survey) 0 = None 1 = Some concern 2 = Major concern 9 = Missing	1	116	

42.	INCOME	Family income (ACE Survey) A = less than $6,000 B = $6,000 - 9,999 C = $10,000 - 14,999 D = $15,000 - 19,999 E = $20,000 - 24,999 F = $25,000 - 29,999 G = $30,000 - 34,999 H = $35,000 - 39,999 I = $40,000 - 49,999 J = $50,000 - 59,999 K = $60,000 - 74,999 L = $75,000 - 99,999 M = $100,000 - 149,999 N = $150,000 or more Z = Missing	1	117	(A)
43.	HRSTUDY	Hours spent studying in H.S. (ACE Survey) 1 = None 2 = less than 1 hour 3 = 1 - 2 4 = 3 - 5 5 = 6 - 10 6 = 11 - 15 7 = 16 - 20 8 = over 20 9 = Missing	1	118	
44.	FAIL	Chances fail 1 or more courses (ACE Survey) 1 = Very good chance 2 = Some chance 3 = Very little chance 4 = No chance 9 = Missing	1	119	
45.	DROPTEMP	Chance dropout temporarily (ACE Survey) 1 = Very good chance 2 = Some chance 3 = Very little chance 4 = No chance 9 = Missing	1	120	
46.	DROPPERM	Chance dropout permanently (ACE Survey) 1 = Very good chance 2 = Some chance 3 = Very little chance 4 = No chance 9 = Missing	1	121	

47.	TRANSF	Chance of transferring (ACE Survey) 1 = Very good chance 2 = Some chance 3 = Very little chance 4 = No chance 9 = Missing	1	122
48.	SATISFY	Chance of be satisfied with WNEC (ACE Survey) 1 = Very good chance 2 = Some chance 3 = Very little chance 4 = No chance 9 = Missing	1	123
49.	WNECAID	1st year financial aid 0 = No complete application 1 = No need 2 = Need 9 = Missing	1	124
50.	STATESUP	State or federal support 0 = None (or unknown) 1 = Vocational rehab. 2 = Social Security Disab. 3 = Displaced workers 4 = Welfare 5 = Military tuition assistance 6 = Voc. Rehab. & Vet. Admin 7 = 9 = Missing	1	125
51.	WORK	1st year on-campus work 0 = Not employed 1 = Employed 9 = Missing	1	126
52.	FDIV	1st academic division 1 = Business 2 = Engineering 3 = Arts and Sciences 4 = Pharmacy 9 = Missing	1	127
53.	FCURR	1st curriculum XXXXX = Missing	5	128-132 (A)
54.	FRES	1st semester residence 0 = Not a resident student 1 = Resident student 9 = Missing	1	133
55.	FSPORT	1st year sports (Number of) 9 = Missing	1	134

56.	FGOVT	1st year student governance 0 = Not involved 1 = Leader 2 = Active member 3 = resume builder 9 = Missing	1	135
57.	FDEPT	1st year departmental clubs (same codes as FGOVT)	1	136
58.	FSPINT	1st year special interest groups (same codes as FGOVT)	1	137
59.	FSER	1st year service organizations (same codes as FGOVT)	1	138
60.	SSPORT	2nd year sports (Number of) 9 = Missing	1	139
61.	SGOVT	2nd year student governance (same codes as FGOVT)	1	140
62.	SDEPT	2nd year departmental clubs (same codes as FGOVT)	1	141
63.	SSPINT	2nd year special interest groups (same codes as FGOVT)	1	142
64.	SSER	2nd year service organizations (same codes as FGOVT)	1	143
65.	LDIV	Last academic division 1 = Business 2 = Engineering 3 = Arts and Sciences 4 = Pharmacy 9 = Missing	1	144
66.	LCURR	Last curriculum XXXXX = Missing	5	145-149 (A)
67.	LGPA	Last GPA 8.88 = Enrolled 9.99 = W/D 1st semester without GPA	4	150-153
68.	LRES	Last residence 0 = Not a resident student 1 = Resident student 9 = Missing	1	154
69.	LWD	Last withdrawal reason (see WD1 for codes)	1	155 (A)

70.	BALANCE	Balance owed at time of separation (Amount of bill at time of departure is rounded down to nearest $100. $1249 would be listed as 12) -1 = Unknown (Old record) 99 = Missing	2	156-157	
71.	ENR1	1st semester enrollment 0 = Not enrolled 1 = Part-time 2 = Full-time 9 = Missing	1	158	
72.	PER1	1st semester persistence 0 = Not enrolled 1 = Completed semester 3 = Withdrew during semester 9 = Missing	1	159	
73.	WD1	1st semester reason for withdrawal (During or at end of semester) Voluntary A = Academic (has ability but not satisfied with WNEC academics /not challenged) 2 = Academic-lack of preparation/ability B = Financial C = Lack of interest/motivation/direction D = Personal E = Medical F = Special G = Full-time employment opportunity H = Change in career objectives I = Social adjustment-not fitting in 1 = Social life (not enough to do/ size of school) J = Reached enrollment goa's K = Disciplinary (voluntary) 3 = Marriage 4 = Enter the military Involuntary L = Academic dismissal M = Disciplinary dismissal 5 = Health form not submitted Other N = Started Pharmacy Phase II O = Graduated - Bachelors P = Graduated - Associates Q = Death (of student) R = Unknown Y = Assumed academic Z = Missing (N/A- Enrolled)	1	160	(A)

74.	MID1	Number of 1st semester mid-term Ds or Fs 9 = Missing	1	161
75.	NONATT1	1st semester non-attendance indicators 9 = Missing	1	162
76.	CUM1	Cum GPA after semester 8.88 = Missing (not appropriate) 9.99 = Missing	4	163-165
77.	ATT1	1st semester academic credits attempted 99 = missing	2	167-168
78.	CRED1	1st semester academic credits completed 99 = Missing	2	169-170

(Note: The same codes are used for subsequent semesters.)

79.	ENR2	2nd semester enrollment	1	171
80.	PER2	2nd semester persistence	1	172
81.	WD2	Reason for withdrawal	1	173 (A)
82.	CUM2	Cum GPA	4	174-177
83.	ATT2	2nd semester credits attempted	2	178-179
84.	CRED2	2nd semester credits completed	2	180-181
85.	ENR3	3rd semester enrollment	1	182
86.	PER3	3rd semester persistence	1	183
87.	WD3	Reason for withdrawal	1	184 (A)
88.	CUM3	Cum GPA	4	185-188
89.	ATT3	3rd semester credits attempted	2	189-190
90.	CRED3	3rd semester credits completed	2	191-192
91.	ENR4	4th semester enrollment	1	193
92.	PER4	4th semester persistence	1	194
93.	WD4	Reason for withdrawal	1	195 (A)
94.	CUM4	Cum GPA	4	196-199
95.	ATT4	4th semester credits attempted	2	190-201
96.	CRED4	4th semester credits completed	2	202-203

97.	ENR5	5th semester enrollment	1	204	
98.	PER5	5th semester persistence	1	205	
99.	WD5	Reason for withdrawal	1	206	(A)
100.	ENR6	6th semester enrollment	1	207	
101.	PER6	6th semester persistence	1	208	
102.	WD6	Reason for withdrawal	1	209	(A)
103.	ENR7	7th semester enrollment	1	210	
104.	PER7	7th semester persistence	1	211	
105.	WD7	Reason for withdrawal	1	212	(A)
106.	ENR8	8th semester enrollment	1	213	
107.	PER8	8th semester persistence	1	214	
108.	WD8	Reason for withdrawal	1	215	(A)
109.	ENR9	9th semester enrollment	1	216	
110.	PER9	9th semester persistence	1	217	
111.	WD9	Reason for withdrawal	1	218	(A)
112.	ENR10	10th semester enrollment	1	219	
113.	PER10	10th semester persistence	1	220	
114.	WD10	Reason for withdrawal	1	221	(A)
115.	ENR11	11th semester enrollment	1	222	
116.	PER11	11th semester persistence	1	223	
117.	WD11	Reason for withdrawal	1	224	(A)
118.	ENR12	12th semester enrollment	1	225	
119.	PER12	12th semester persistence	1	226	
120.	WD12	Reason for withdrawal	1	227	(A)
121.	DROP	Dropout Proneness (CSI) 0 = Missing	1	228	
122.	ACADIF	Predicted academic difficulty (CSI) 0 = Missing	1	229	

123. **EDSTRESS** Educational stress (CSI) — 1 — 230
0 = Missing

124. **IMPRESS** Initial Impressions of WNEC (CSI) — 2 — 231-232
00 = Missing

125. **EXPECT** Hrs per week expect to study (CSI) — 1 — 233
1 = 3 hrs
2 = 6 hrs
3 = 9 hrs
4 = 12 hrs
5 = 15 hrs
6 = 19 hrs
7 = 21 or more hrs
9 = missing

126. **DESTRANS** Desire to transfer (CSI) — 1 — 234
0 = No desire expressed
1 = Desires to transfer
2 = Strong desire to transfer
9 = Missing